

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
21 April 2005 (21.04.2005)

PCT

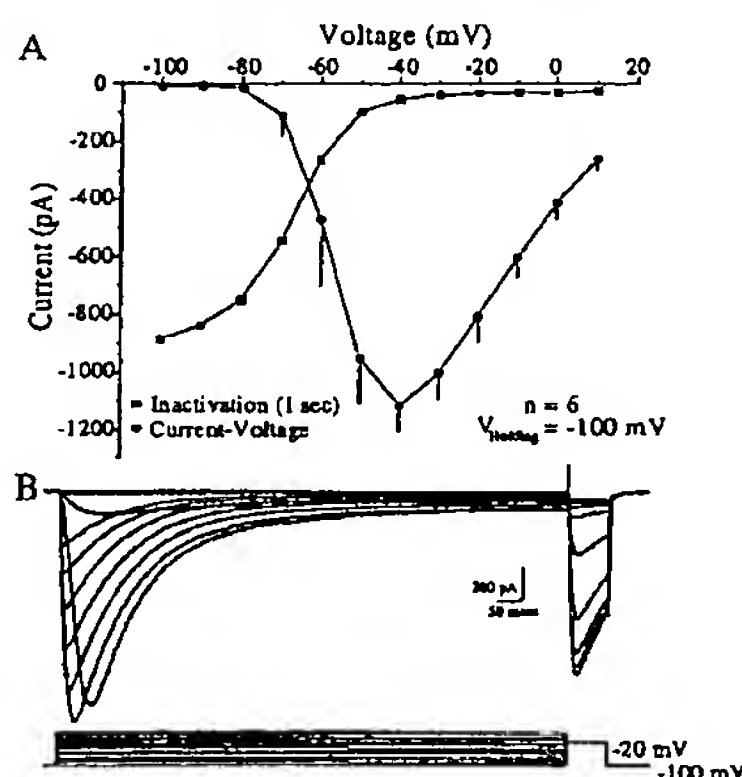
(10) International Publication Number  
**WO 2005/035716 A2**

- (51) International Patent Classification<sup>7</sup>: C12N (74) Common Representative: MERCK & CO., INC.; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US).
- (21) International Application Number: PCT/US2004/031820
- (22) International Filing Date: 28 September 2004 (28.09.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/508,112 2 October 2003 (02.10.2003) US
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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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(54) Title: NUCLEIC ACID MOLECULES ENCODING NOVEL HUMAN LOW-VOLTAGE ACTIVATED CALCIUM CHANNEL PROTEINS, DESIGNATED - ALPHA 1I-1 AND ALPHA 1I-2, ENCODED PROTEINS AND METHODS OF USE THEREOF

Electrophysiological characterization of the  $\alpha 1I$  channel activation and inactivation properties when expressed the T-Rex cell line.



(57) Abstract: Disclosed are mammalian nucleic acid sequences encoding  $\alpha 1I$  subunit isoforms of a voltage-gated calcium channel. Specifically disclosed are novel variants of the  $\alpha 1I$  subunit designated herein as  $\alpha 1I$ -1 and  $\alpha 1I$ -2. In other aspects, the disclosure relates to expression vectors which encode the novel subunits of the invention, as well as cells containing such vectors. Antibodies specific for each of the variant subunits are also provided. The nucleic acid sequences of the invention find application, for example, in screening for compounds which modulate the activity of voltage-gated calcium channels and also in diagnostic methods for diagnosing various T-type channel mediated disorders, e.g., epilepsy, cancer, pain, sleep disorders and the autoimmune disease Lambert-Eaton Syndrome. Diagnosing defects in  $\alpha 1I$  subunit genes of a patient with a neuronal disease such as epilepsy are also included. An additional application of the nucleic acid sequences of the invention is in therapeutic methods of treatment for  $\alpha 1I$  subunit mediated disorders.



**Published:**

— without international search report and to be republished  
upon receipt of that report

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